

15 Ramp Meter Signals

The ramp layout shall be drawn showing edge of pavement or curb line, lane use arrows, centerlines with stationing, lane markings, right-of-way lines, crosswalks, street names, north arrow and other features as needed.

All contract plans shall be plotted “B” size (11”x17”). Ramp Meter Plan sheets shall normally be drawn at a scale of 40:1. This is set with Annotation Scale. You can turn this on and off from many different locations including

- The drawing scale toolbar
- The place active cell dialog
- The place text dialog

For additional information on using Annotation Scale click on the following link:

[MicroStation Users Guide.](#)

NOTE: Scales smaller or larger than 40’:1” are not acceptable for Ramp Meter plans. The use of break lines to fit the plan on one sheet shall be the only acceptable practice.

The plan sheets shall include:

- Location and type of ramp meter loops, loop wire entrance type, loop number, notes for symbols and details used and all other equipment needed to install the detector system.
- All signal pole foundations for; mast arm poles and vehicle signal poles shall be shown.
- Underground conduits, wiring, junction boxes, Type 334 ramp meter controller cabinet, service equipment.
- Reference sign plans using the hex star bubblenote for static signs mounted on P.S.S.T. or wood posts. See ramp meter sign list Figure 15.5.
- Each installed, removed, abandoned, or retained item shall have the correct bubble and a leader(s) to the item.
- Pole Entrance Chart Detail sheet showing equipment on poles.
- Loop wiring diagram for ramp meters. The diagram shall include;
 - Number of turns on the loop wire,
 - loop number,
 - distance from the painted gore point to the center of the loop,
 - distance from stop line,
 - splice point (cabinet or junction box),
 - phase,
 - function, and
 - input slot.

See the next three pages for plan sheet examples for items that must be shown.

Figure 15-1 | Sample Ramp Meter Legend and Pole Entrance Chart

LEGEND

NAME OF HWY. AT NAME OF RD. (S.B. ON-RAMP) OR E.O.O AT B.P. O.OO (CITY / TOWN)

000000

LEGEND

NAME OF HWY. AT NAME OF RD. (S.B. ON-RAMP) OR E.O.O AT B.P. O.OO (CITY / TOWN)

000000

CONTROLLERS

(34) Install a model 334 cabinet & control equipment with riser frame as shown (ramp meter)

(35) Install model 170E/HC11 controller in model 334 cabinet

POLES

(4A) Install (T-type) standard traffic signal mast arm pole (See, "Pole Entrance Chart")

(4B) Install (L length) foot traffic signal mast arm

(4C) Install pedestrian signal pedestal with (range) base

(4D) Retain and protect existing power pole (Power source)

SIGNALS

(5A) Install phase (Ph-phase) vehicle signal

(5B) Install 12 inch flashing yellow beacon

SIGNS

(6A) Install aluminum (24"x30", type "W") "ONE VEHICLE PER GREEN" sign (R10-28)

(6B) Install aluminum (36"x36", type "T") "RAMP METERED WHEN FLASHING" sign (M3-8)

See signing plans for details on sign and placement

CABINETS

(6C) Install base mounted service cabinet, 120/240 volt metered, for signal system

(6D) Install recessed terminal cabinet, see T.A.S. DWG NO. XXXXX

JUNCTION BOXES

(7A) Install 17"x10"x12" (min. dimension) precast concrete junction box with concrete apron

(7B) Install 22"x12"x12" (min. dimension) precast concrete junction box with concrete apron

(7C) Install 30"x17"x12" (min. dimension) precast concrete junction box with concrete apron

(7D) Install 6" max. sand poster block-out with 1/2 size inch conduit to junction box

DEFLECTION

(8) Insert 6" round or 4" diamond Ramp Meter (F-function) selector loop

Functions:
 D = Demand
 C = Count
 P = Passage
 Q = Queue

(9A) Install (N number) of cables/function (F-function) loop feeder cables

(9B) Install (N number) pair of loop wires

WIRING

(M-C) Install (N number) No. 8 type THWN (Signal system common) and Ramp meter pedestal common

(F-12) Install (N number) No. 12 AWG THWN (For Vehicle, Pedestrian and Ramp meter pedestal common)

(W-6) Install (N number) No. (G-AWG) wire size type THWN wires

(M-G) Install (N number) No. (G-AWG) wire size type XHHW wires

CONDUITS

(S) Install (S-size) inch electrical conduit

(W) Install conduit and wire as required by power company

(E) Coordinate conduit and wire w/ telephone company for phone operation of system turn-on

(S-1) Install 6" max. sand poster block-out

(H-1) Install conduit by horizontal directional drilling, open trench not allowed

HEADS & BRACKETS

SIGNAL MOUNTING OPTIONS

B = Adjustable signal bracket assembly w/rods caps
 (Insert 1" generative cross signal)

SIGNAL MOUNTING OPTIONS

AB = Adjustable sign bracket assembly w/rods caps
 SW = 4" size pole mounting bracket

SIGNAL HEAD TYPES

1T = 12"Y

2 = 12"R, 12"Y, 12"G

8 = 8" R, 8" G

REGISTERED PROFESSIONAL ENGINEER

XXXXXX

OREGON O.OO

Expires Dec. XXXX 'XX

OREGON DEPARTMENT OF TRANSPORTATION

TRAFFIC SIGNALING SECTION

PROJECT NAME

SOME HIGHWAY

ANY COUNTY

DESIGNED BY: Name

CHECKED BY: Name

DATE: M/D/YY

RAMP METER PLAN

LEGEND

Form No. 000000 (Rev. 11-00)

NOTE:

See T.A.S. DWG. 000000 Thru 000000 For Ramp Meter Plans

THIS TEXT SHALL INCLUDE THE FILE NAME AND LOCATION, DATE AND TIME OF PRINT AND DRAFTER'S BACK OF NAME

Chapter 15 | Ramp Meter Signals
July 2014

15-2

Oregon Department of Transportation
Traffic Standards Unit

Figure 15-2 | Sample Ramp Meter Plan

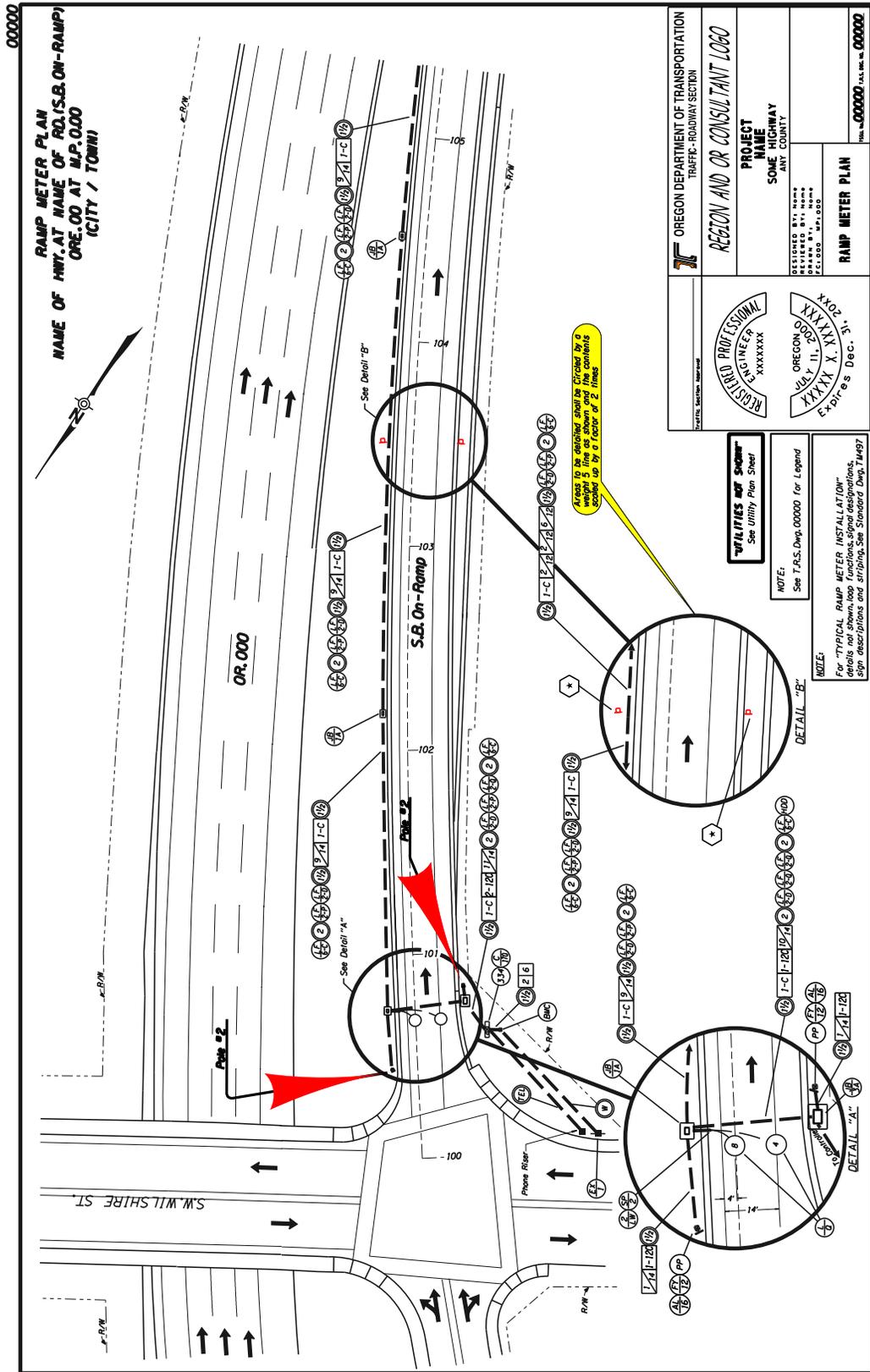
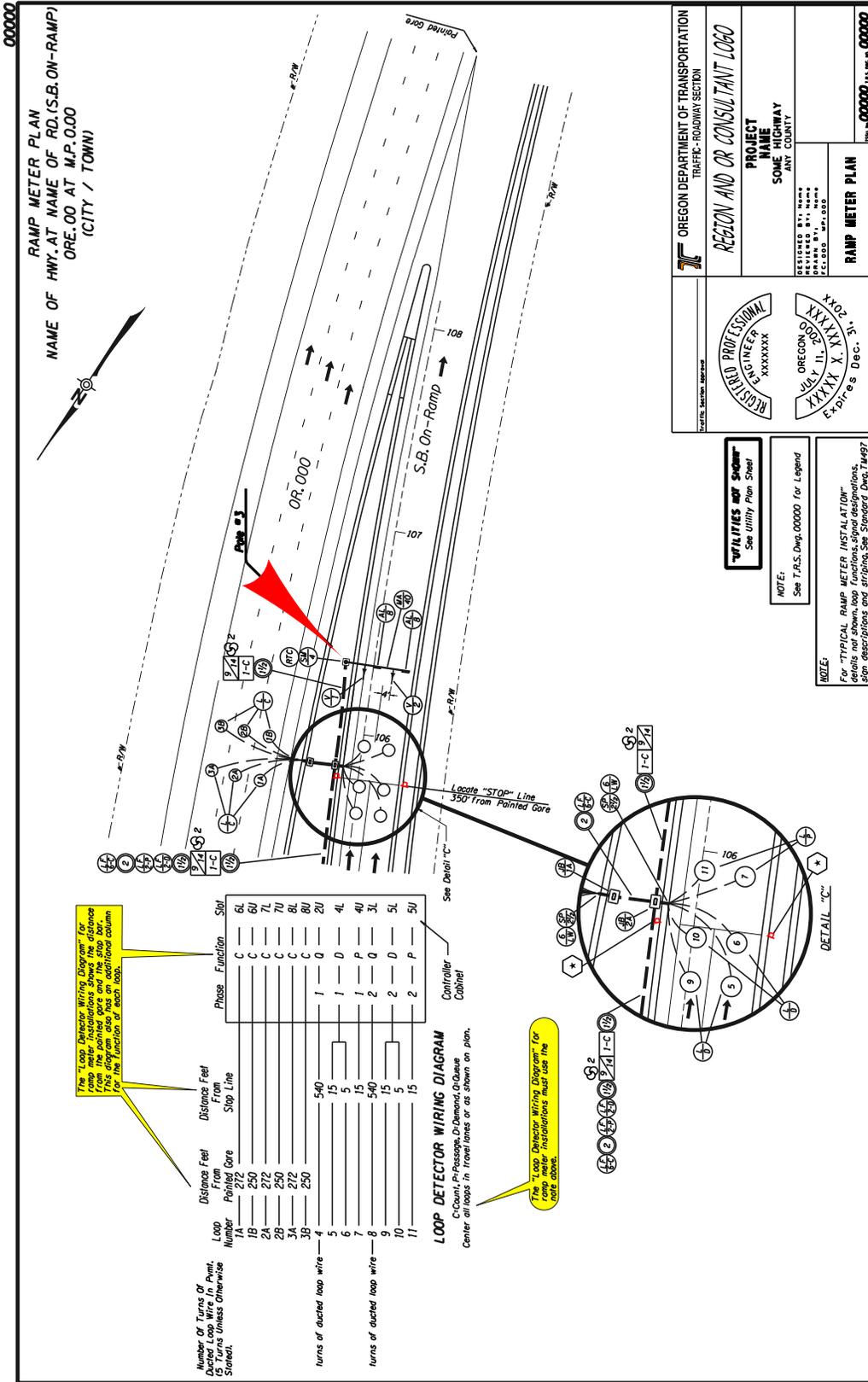


Figure 15-3 | Sample Ramp Meter Plan



The "Loop Detector Wiring Diagram" for ramp meter installations should show the distance from the painted gore and the stop line for the function of each loop.

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REGISTERED PROFESSIONAL ENGINEER XXXXXXXX
OREGON 000
JULY 11, 2002
XXXXX X
Expires Dec. XXXX '15

NOTE:
See T.P.S. Dwg. 00000 For Legend

NOTE:
For "TYPICAL RAMP METER INSTALLATION" details not shown, loop functions, signal assignments, sign descriptions and striping, See Standard Dwg. T4497

OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC-ROADWAY SECTION

PROJECT NAME
SOME HIGHWAY
ANY COUNTY

DESIGNED BY: NAME
CHECKED BY: NAME
DATE: 0000 00 00
C.I. 000 00 000

RAMP METER PLAN

000000

THIS TEXT SHALL INCLUDE THE FILE NAME AND LOCATION, DATE AND TIME OF PRINT AND DATES BASED ON NAME

Figure 15-4 | Sample Detail Sheet

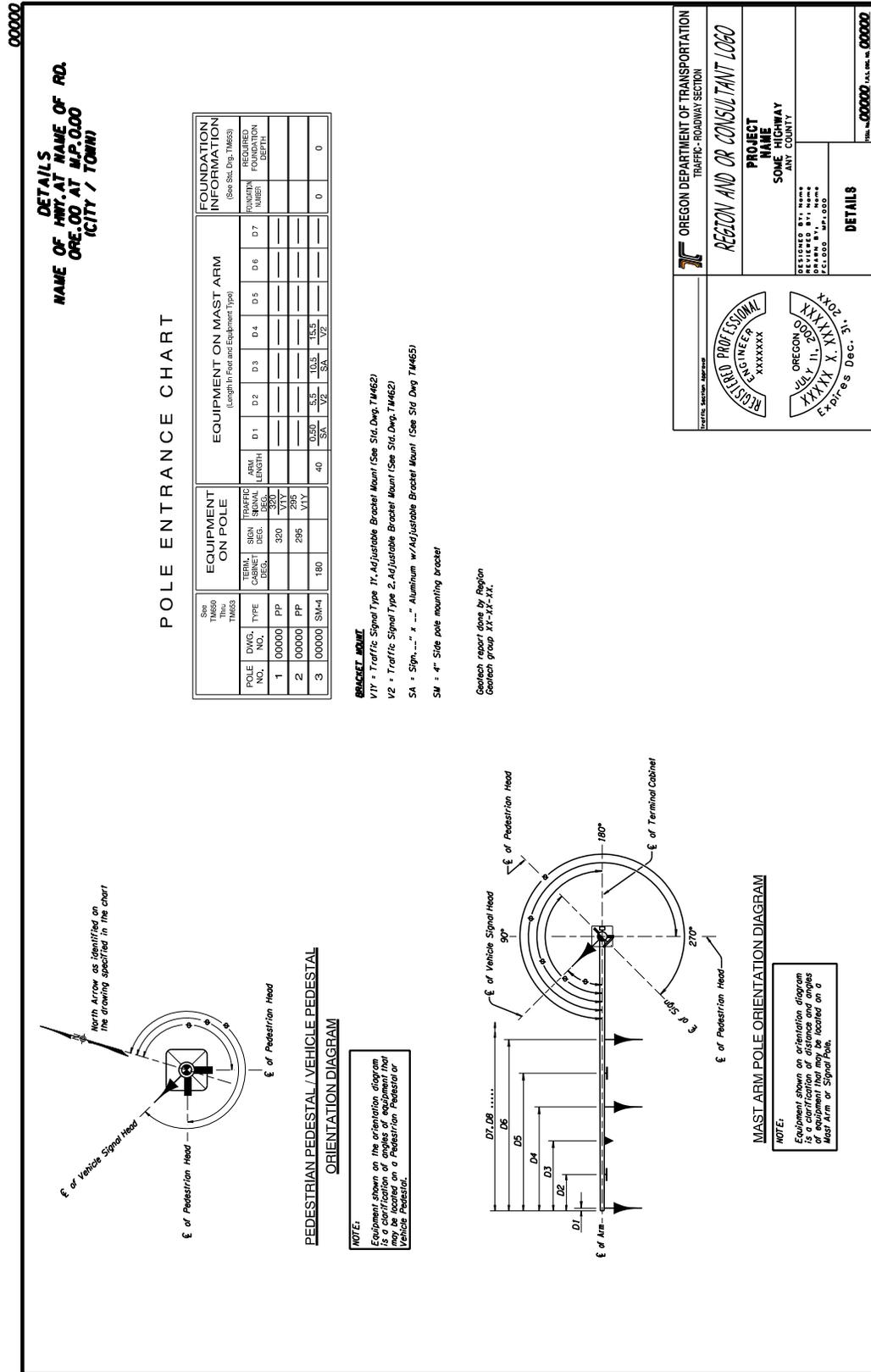


Figure 15-5 | Ramp Meter Signs

R10-28			<i>"ONE VEHICLE PER GREEN" Sign (R10-28) (24"x30")</i>
OR20-1			<i>"ONE VEHICLE PER GREEN" Sign (OR20-1) (24"x12")</i>
R10-6			<i>"STOP HERE ON RED" With Arrow Sign (R10-6) (24"x36")</i>
W3-8			<i>"RAMP METERED WHEN FLASHING" Sign (W3-8) (36"x36")</i>
OR20-5			<i>"FORM 2 LANES WHEN METERED" Sign (OR20-5) (24"x30")</i>
W3-4			<i>"BE PREPARED TO STOP" Sign (W3-4) (36"x36")</i>
W16-13P			<i>"WHEN FLASHING" Sign (W16-13P) (24"x18")</i>